

Micropower Radar Measurements of Human Vocal Articulator Motions.

Gregory Burnett, (Lawrence Livermore National Laboratory, 7000 East Ave., Livermore, CA 94551), John F. Holzrichter (Lawrence Livermore National Laboratory), Lawrence C. Ng, (Lawrence Livermore National Laboratory), Rebecca Leonard (UC Medical Center, Sacramento), and Wayne A. Lea (Speech Sciences Institute, MN, 55124)

A major impediment to speech research is the lack of readily available scientific means of measuring vocal tract motion while a subject is speaking. Several experiments have been conducted recently using the micropower radars, invented at the Lawrence Livermore National Laboratory (LLNL), to detect speech articulator motions including vocal folds, lips, and tongue with considerable successes. In order to establish the scientific accuracy of the articulator measurements, it is important to quantify the radar returns from known tissue interface positions. One of the most important articulatory systems is the glottal structure which defines the vocalized excitation function of human speech. This structure can now be measured in real time and therefore one can describe the excitation function in real time for each speech time frame. Calibration experiments have been conducted to relate the radar return signals to glottal opening, as well as air flow and air pressure. These results will be presented in detail. It is believed that LLNL's micropower radars could be the basic component used in building a low cost, noninvasive instrument for innovative speech science research.

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Suggested for a poster paper in Robust speech recognition session

Technical Area: Signal Processing in Acoustics/Speech Communication

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Telephone Number: 510-422-5469 (Greg Burnett)

Send notice to: Greg Burnett

Special facility: VCR and 25" color monitor

Method of presentation: poster

For Speech Communication Student Award

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